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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/747,004	12/21/2000	Jing-Shan Hu	3366.1	2941

7590

06/28/2002

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EXAMINER

SIEW, JEFFREY

ART UNIT

PAPER NUMBER

1637

DATE MAILED: 06/28/2002

9

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/747,004

Applicant(s)

HU ET AL.

Examiner

Jeffrey Siew

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 April 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 December 2000 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

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DETAILED ACTION

Specification

- A) References to attorney docket numbers is improper and require deletion.
(see e.g. page 38)
- B) Applicant is reminded that the current status of all US applications referenced in application. (see e.g. pg 30 line 15)

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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Claims 1-16,18 & 20-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Urdea et al (US4,868,105 Sept. 19, 1989) in view of Lockhart et al (6,040,138 March 21, 2000).

Urdea et al teach the detection of target nucleic acid using two sets of probes on a support. (see whole doc. esp. abstract). One is bound to support and contains a region that binds to a recognition region of the second probe. The second probe contains a region that binds to target nucleic acid (see col. 1 lines 41-61 and Figure 1A). They teach the subset regions will have at least 15 or at least 25 nucleotides. (see col. 2 line 56-60). They teach that labels may be fluorescers (see col.3 line 39 and detected by pandex screen machine (see 13 line 54). They teach that analyte samples may be any nucleic acids from biological fluids (see col.4 line 1-2).

Urdea et al do not explicitly teach detection by hybridization pattern.

Lockhart et al teach expression monitoring on high density array with bound oligonucleotide arrays in which more than 100 different oligonucleotides may be bound (see whole doc. esp. abstract). They teach a density of greater than 1000 oligonucleotides per cm² (see col .3 line 15). They teach light directed polymer synthesis for constructing immobilized oligonucleotides (see col. 3 line 47). They also teach detection with fluorescence microscope to detect patterns (see col. 2 line 28 & col. 3 line 67). They teach detecting form mRNA or cDNA from biological samples(see col.4 lines 8-12).

One of ordinary skill would have been motivated to combine Urdea et al's probe sets to Lockhart et al's array in order to detect a multiplicity of genes. Urdea et al state that their method provides the advantages of increased signal to noise (see col.1 line 27). It would have been prima facie obvious to apply Lockhart et al's array to Urdea et al's probes in order to provide a high throughput analysis of multiple genes with high signal to noise ratio.

The response filed 4/22/02 to the prior art rejections has been fully considered and deemed not persuasive. The response states that Urdea do not teach or provide suggestions for multiple probes in microarray assays and that adding large number of mediator probes would increase complexity of microarray based assays. The claimed methods provide the advantage of detecting different sets of targets. First of the all, the claims do not recite of plurality of different targets and Urdea et al do teach using multiple probes and mediator probes (see Figure 1). Moreover, the teaching of detecting different targets is provided by Lockhart et al. The level of complexity in the detecting different targets may vary with the number of different targets. It would have been in the skill of one of ordinary skill in the art at the time the invention was made to detect at least a number of different targets using the combination of Lockhart et al and Urdea et al. The prior art rejections are maintained.

2. Claims 17 & 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Urdea et al (US4,868,105 Sept. 19, 1989) in view of Lockhart et al (6,040,138 March 21, 2000) in further view of .

The teachings of Lockhart et al and Urdea et al are described previously.

Urdea et al do not teach 5-3 or 3-5 synthesis.

Teach 5-3 or 3-5 synthesis (see col.5 line 62-62 & col. 10 line 11 -20).

One of ordinary skill in the art would have motivated to apply synthesis in order to construct oligonucleotides in the direction that would bind to Urdea second probes. It was well known and commonly practiced in the art to synthesize the oligonucleotides in either direction, it

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would have been prima facie obvious to apply the synthesis of Vinayak et al in order to create oligonucleotides that would optimally hybridize in the direction of the complementary target.

SUMMARY

3. No claims allowed.

CONCLUSION

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

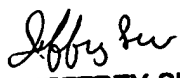
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey Siew whose telephone number is (703) 305-3886 and whose e-mail address is Jeffrey.Siew@uspto.gov. However, the office cannot guarantee security through the e-mail system nor should official papers be transmitted through this route. The examiner is on flex-time schedule and can best be reached on weekdays from 6:30 a.m. to 3 p.m. If attempts to reach the examiner are unsuccessful, the examiner's supervisor, Gary Benzion, can be reached on (703)-308-1119.

Any inquiry of a general nature, matching or filed papers or relating to the status of this application or proceeding should be directed to the Monica Graves for Art Unit 1637 whose telephone number is (703)-306-2938.

Papers related to this application may be submitted to Group 1600 by facsimile transmission. Papers should be faxed to Group 1600 via the PTO Fax Center located in Crystal Mall 1. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CM1 Center numbers for Group 1600 are Voice (703) 308-3290 and Before Final FAX (703) 872-9306 or After Final FAX (703) 30872-9307.


JEFFREY SIEW
PRIMARY EXAMINER

June 27, 2002